

Amendments to the claims:

This listing of claims will replace all prior versions and listings of claims in the application.

IN THE CLAIMS:

1. (Original) Lead substitute material for radiation protection purposes in the energy range of an X-ray tube having a voltage of from 60 to 140 kV, wherein for nominal overall lead equivalents of from 0.25 to 2.00 mm the lead substitute material comprises from 12 to 22 wt.% of a silicone-based material, from 1 to 75 wt.% Sn or Sn compounds, from 0 to 73 wt.% W or W compounds, from 0 to 80 wt.% Bi or Bi compounds.
2. (Currently Amended) Lead substitute material according to claim 1, characterised in that wherein the lead substitute material comprises from 12 to 22 wt.% of the silicone-based material, from 1 to 39 wt.% Sn or Sn compounds, from 0 to 60 wt.% W or W compounds and from 0 to 60 wt.% Bi or Bi compounds.
3. (Currently Amended) Lead substitute material according to claim 2, characterised in that wherein the lead substitute material comprises from 12 to 22 wt.% of the silicone-based material,

from 0 to 39 wt.% Sn or Sn compounds,
from 16 to 60 wt.% W or W compounds and
from 16 to 60 wt.% Bi or Bi compounds.

4. (Currently Amended) Lead substitute material according to claim 1,

characterised in that wherein

the lead substitute material comprises

from 12 to 22 wt.% of the silicone-based material,

from 40 to 60 wt.% Sn or Sn compounds,

from 7 to 15 wt.% W or W compounds and

from 7 to 15 wt.% Bi or Bi compounds.

5. (Currently Amended) Lead substitute material according to

any one of claims 1 to 4, characterised in that claim 1, wherein

the lead substitute material additionally comprises up to 40 wt.% of one

or more of the following elements: Er, Ho, Dy, Tb, Gd, Eu, Sm and/or

their compounds and/or CsI.

6. (Currently Amended) Lead substitute material according to claim 5,

characterised in that wherein

the lead substitute material additionally comprises

up to 20 wt.% of the elements and/or their compounds and/or CsI.

7. (Currently Amended) Lead substitute material according to claim 6,
characterised in that wherein
the lead substitute material additionally comprises up to 8 wt.%
of the elements and/or their compounds and/or CsI.
8. (Currently Amended) Lead substitute material according to ~~any one of claims 1 to 7,~~
characterised in that claim 1, wherein
the lead substitute material additionally comprises up to 40 wt.%
of one or more of the following elements: Ta, Hf, Lu, Yb, Tm, Th,
U and/or their compounds.
9. (Currently Amended) Lead substitute material according to claim 8,
characterised in that wherein
the lead substitute material additionally comprises up to 20 wt.%
of the elements and/or their compounds.
10. (Currently Amended) Lead substitute material according to claim 9,
characterised in that wherein
the lead substitute material additionally comprises up to 8 wt.%
of the elements and/or their compounds.
11. (Currently Amended) Lead substitute material for radiation protection
purposes in the energy range of an X-ray tube having a voltage of from

60 to 90 kV according to ~~any one of claims 5 to 10,~~
~~characterised in that claim 5, wherein~~
for nominal overall lead equivalents of from 0.25 to 0.6 mm the lead
substitute material comprises
from 12 to 22 wt.% of the silicone-based material,
from 49 to 65 wt.% Sn or Sn compounds,
from 0 to 20 wt.% W or W compounds,
from 0 to 20 wt.% Bi or Bi compounds and
from 5 to 35 wt.% of one or more of the elements Gd, Eu, Sm and/or
their compounds and/or CsI.

12. (Currently Amended) Lead substitute material according to ~~any one~~
~~of claims 1 to 11,~~
~~characterised in that claim 1, wherein~~
the silicone-based material comprises silicone rubber.

13. (Currently Amended) Lead substitute material according to claim 12,
~~characterised in that wherein~~
the silicone rubber comprises dimethyl silicone rubber, phenylmethyl
silicone rubber, phenyl silicone rubber and polyvinyl silicone rubber.

14. (Currently Amended) Lead substitute material according to ~~any one~~
~~of claims 1 to 13,~~

~~characterised in that claim 1, wherein~~
it comprises fillers and processing aids.

15. (Currently Amended) Lead substitute material according to
~~any one of claims 1 to 14,~~
~~characterised in that claim 1, wherein~~
it comprises a structure of protective layers of different compositions.
16. (Currently Amended) Lead substitute material according to claim 15,
~~characterized in that wherein~~
it comprises a structure of at least two protective layers of different compositions which are separate or joined together, wherein the protective layer(s) more remote from the body comprise(s) predominantly the elements having a lower atomic number, or their compounds, and the protective layer(s) close to the body comprise(s) predominantly the elements having a higher atomic number, or their compounds.
17. (Currently Amended) Lead substitute material according to claim 15 or 16,
~~characterised in that wherein~~
it comprises a structure of at least two protective layers of different compositions which are separate or joined together, wherein at least in one layer at least 50% of the total weight consists of only one element from the group Sn, W and Bi or their compounds.

18. (Currently Amended) Lead substitute material according to claim 16,
~~characterised in that wherein~~
it comprises a structure of at least two protective layers of different compositions which are separate or joined together, wherein the protective layer(s) more remote from the body comprise(s) predominantly the elements or their compounds having a higher X-ray fluorescent yield, and the protective layer(s) close to the body comprise(s) the elements or their compounds having a lower X-ray fluorescent yield.

19. (Currently Amended) Lead substitute material according to
~~any one of claims 16 to 18,~~
~~characterised in that claim 16, wherein~~
a weakly radioactive layer is embedded between two non-radioactive protective layers which are separate from or joined to the radioactive layer.

20. (Currently Amended) Lead substitute material according to
~~any one of claims 1 to 19,~~
~~characterised in that claim 1, wherein~~
the metals or metal compounds are granular and their particle sizes exhibit a 50th percentile according to the following formula

$$D_{50} = \frac{d \cdot p}{10} \text{ mm}$$

wherein

D_{50} represents the 50th percentile of the particle size distribution,

d represents the layer thickness in mm and

p represents the proportion by weight of the particular material component in the total weight,

and the 90th percentile of the particle size distribution $D_{90} \leq 2 \cdot D_{50}$.

21. (Currently Amended) Radiation protection clothing of lead substitute material according to ~~any one of claims 1 to 20~~ claim 1.